

No. 712,653.

Patented Nov. 4, 1902.

J. L. COOK.
DRILL SOCKET.

(Application filed Sept. 9, 1901.)

(No Model.)

2 Sheets—Sheet 1.

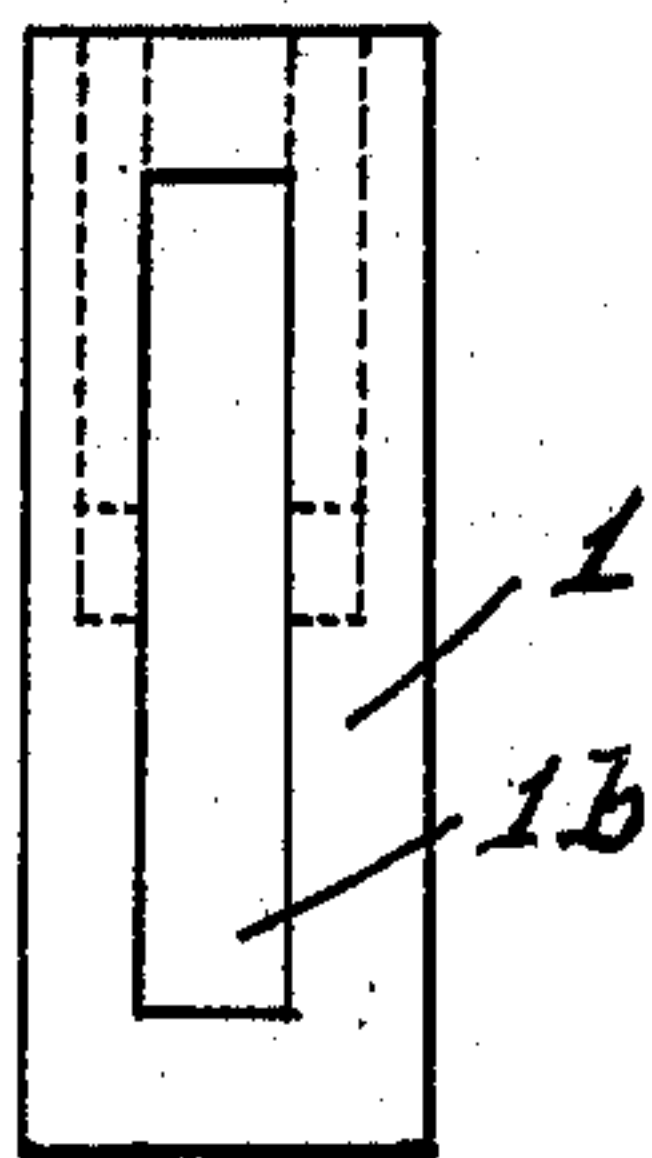
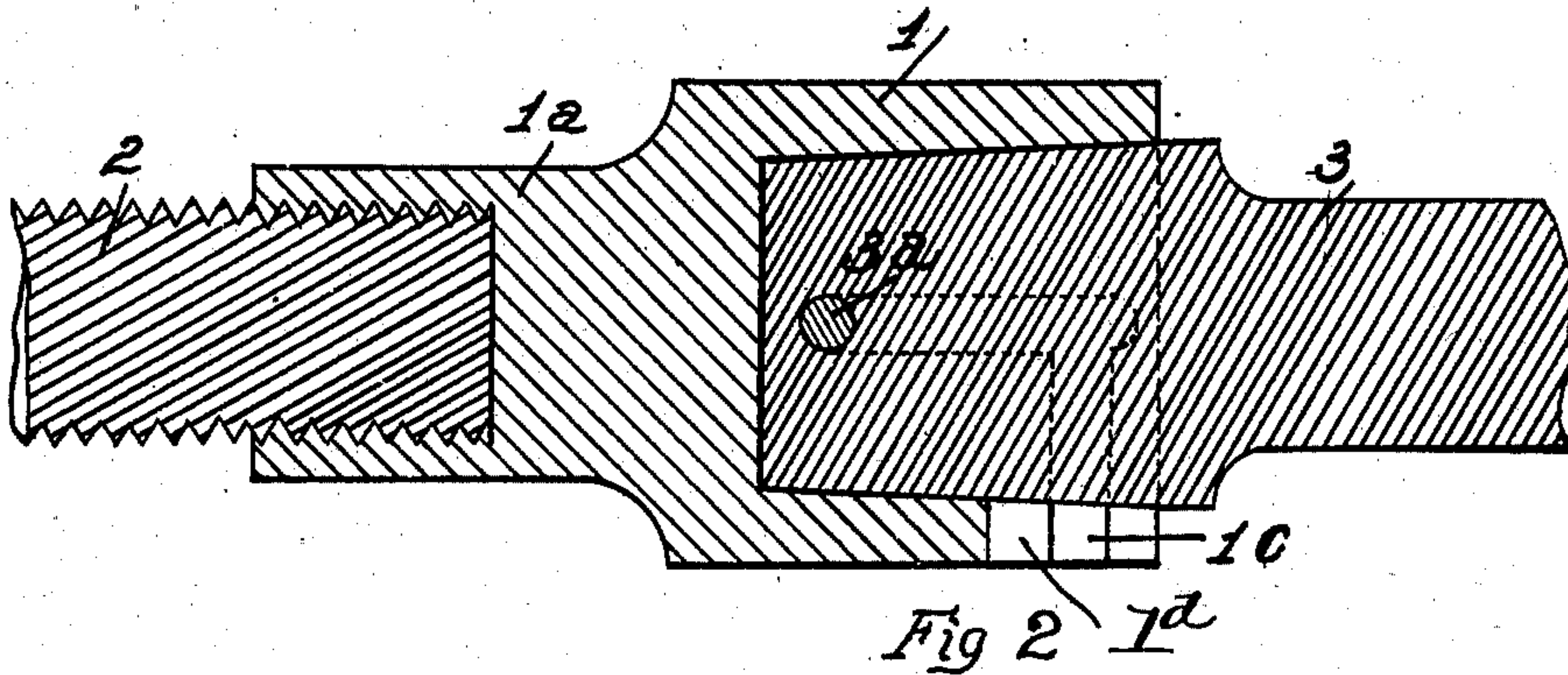


Fig 3.

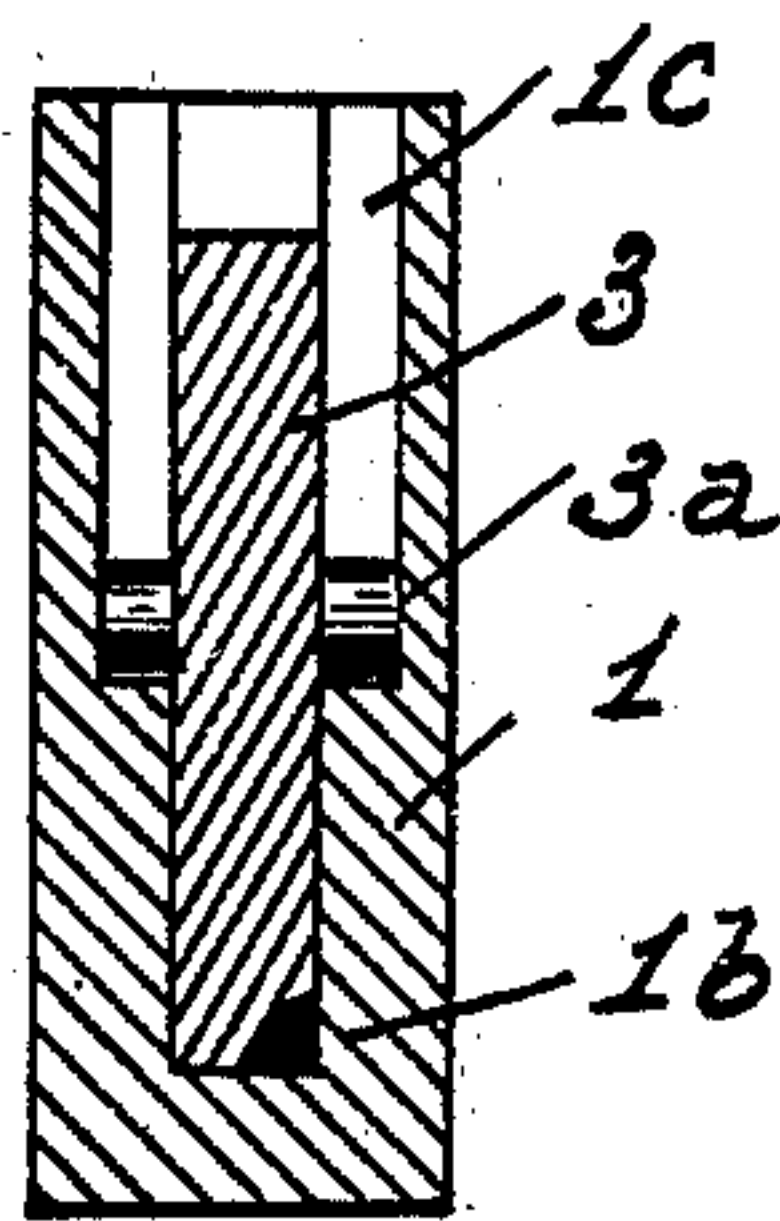


Fig 4.

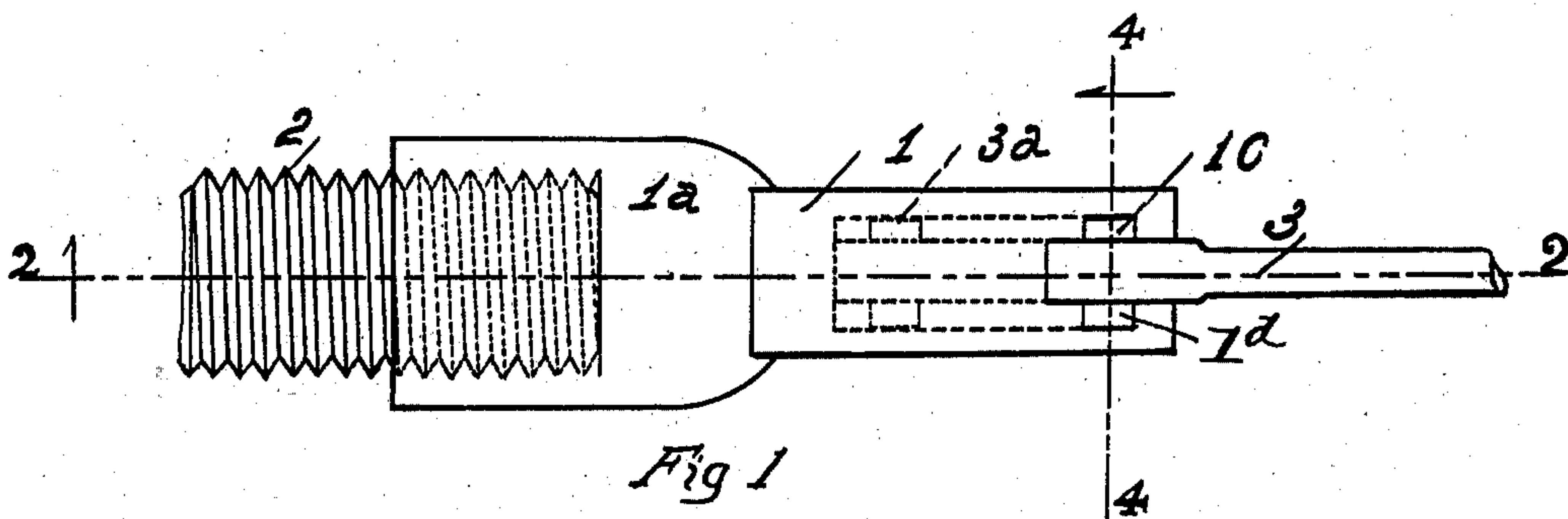


Fig 1

WITNESSES.
Fordyce W. Brown.
Julia Tarrent.

INVENTOR.
JAMES L. COOK.
By Atty C. DuBois.

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2 Sheets—Sheet 2.

FIG. 5.

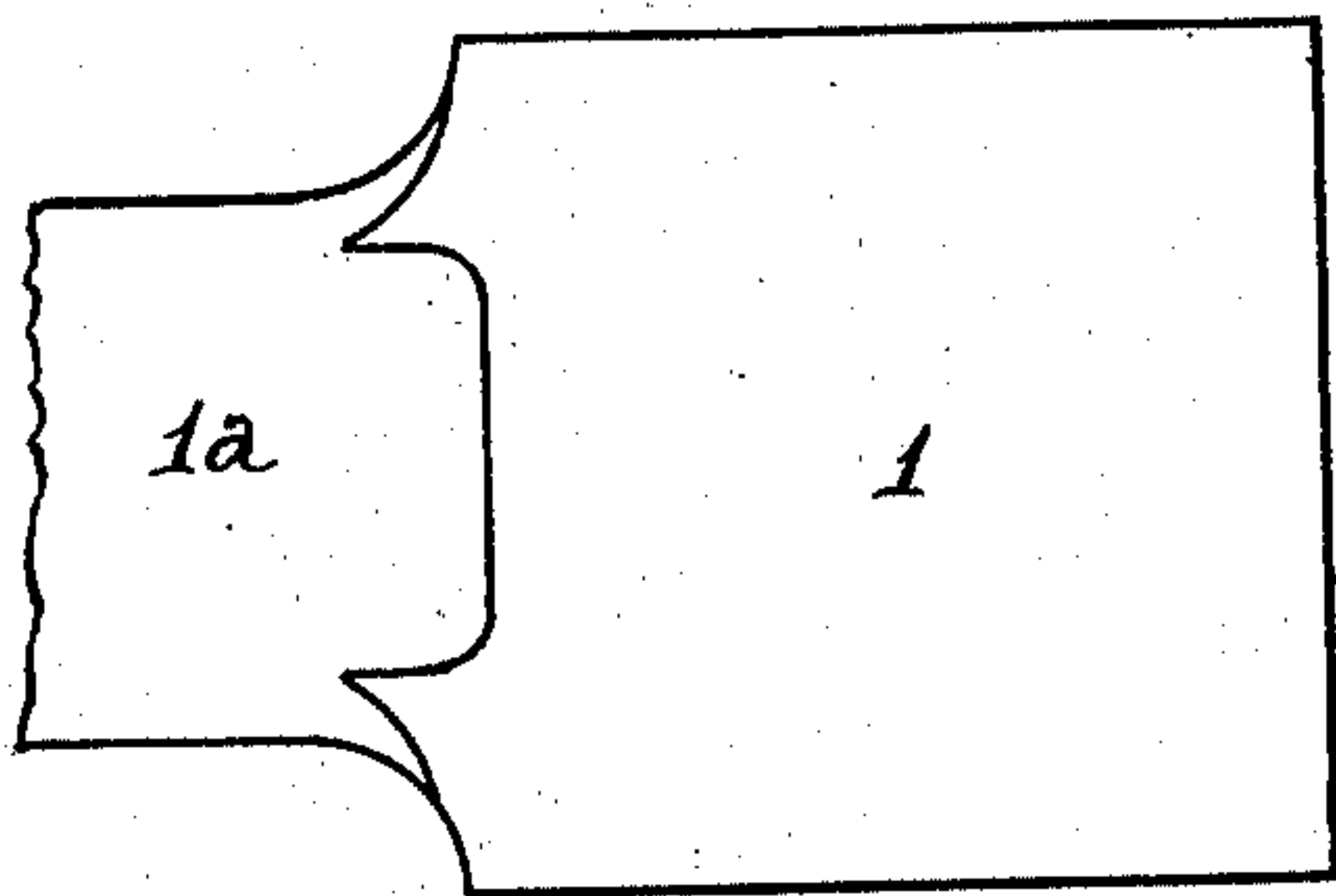


FIG. 7.

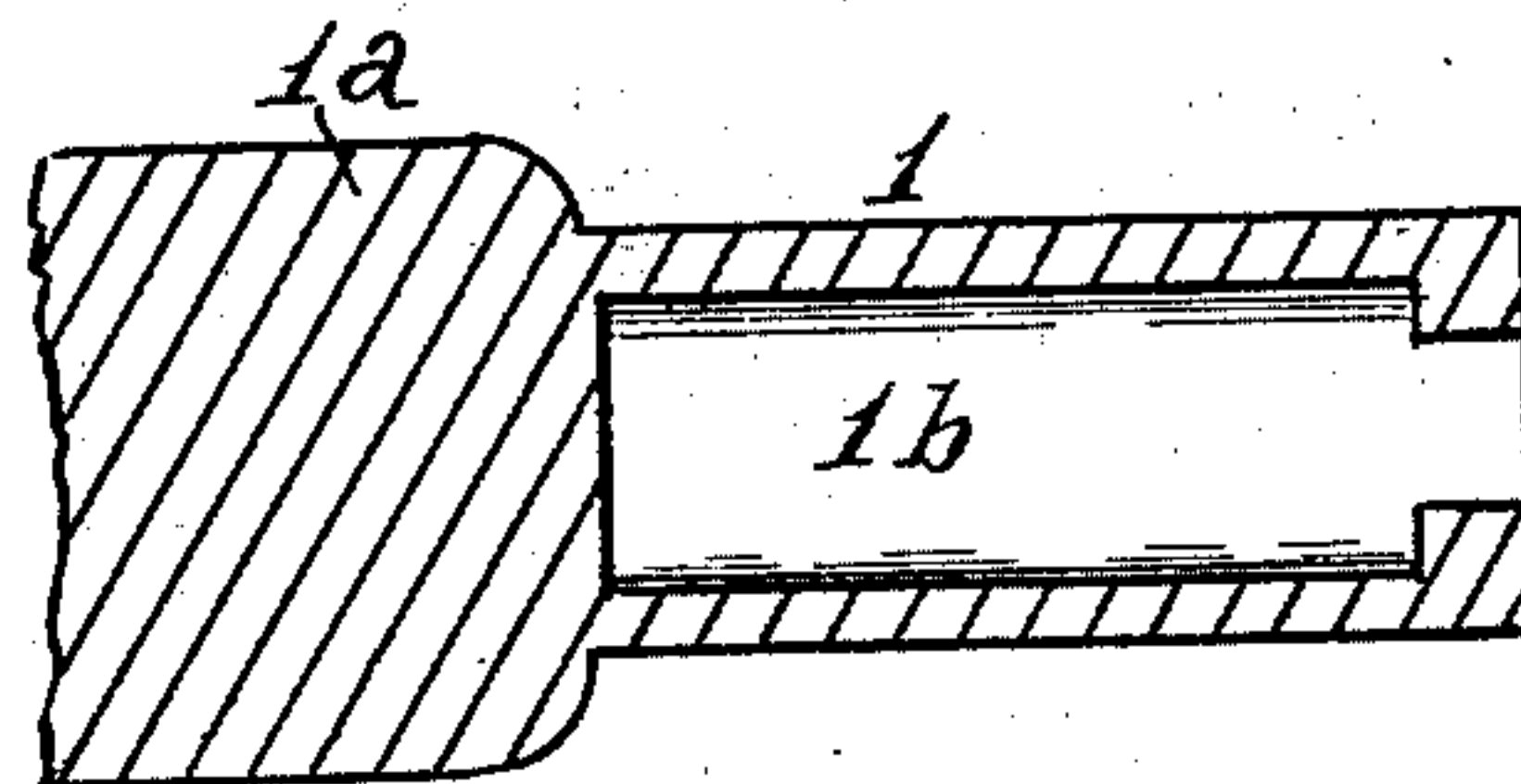
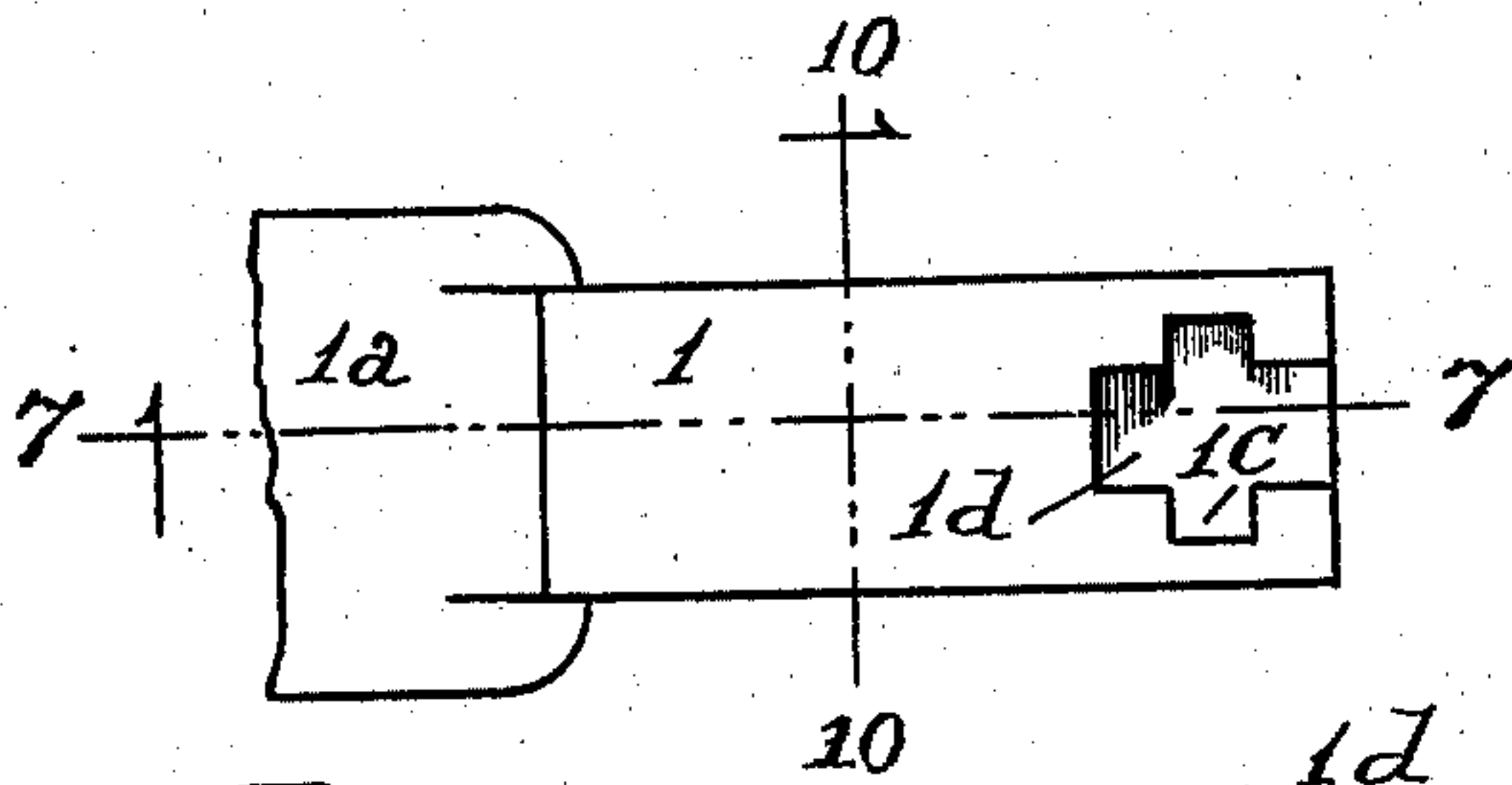
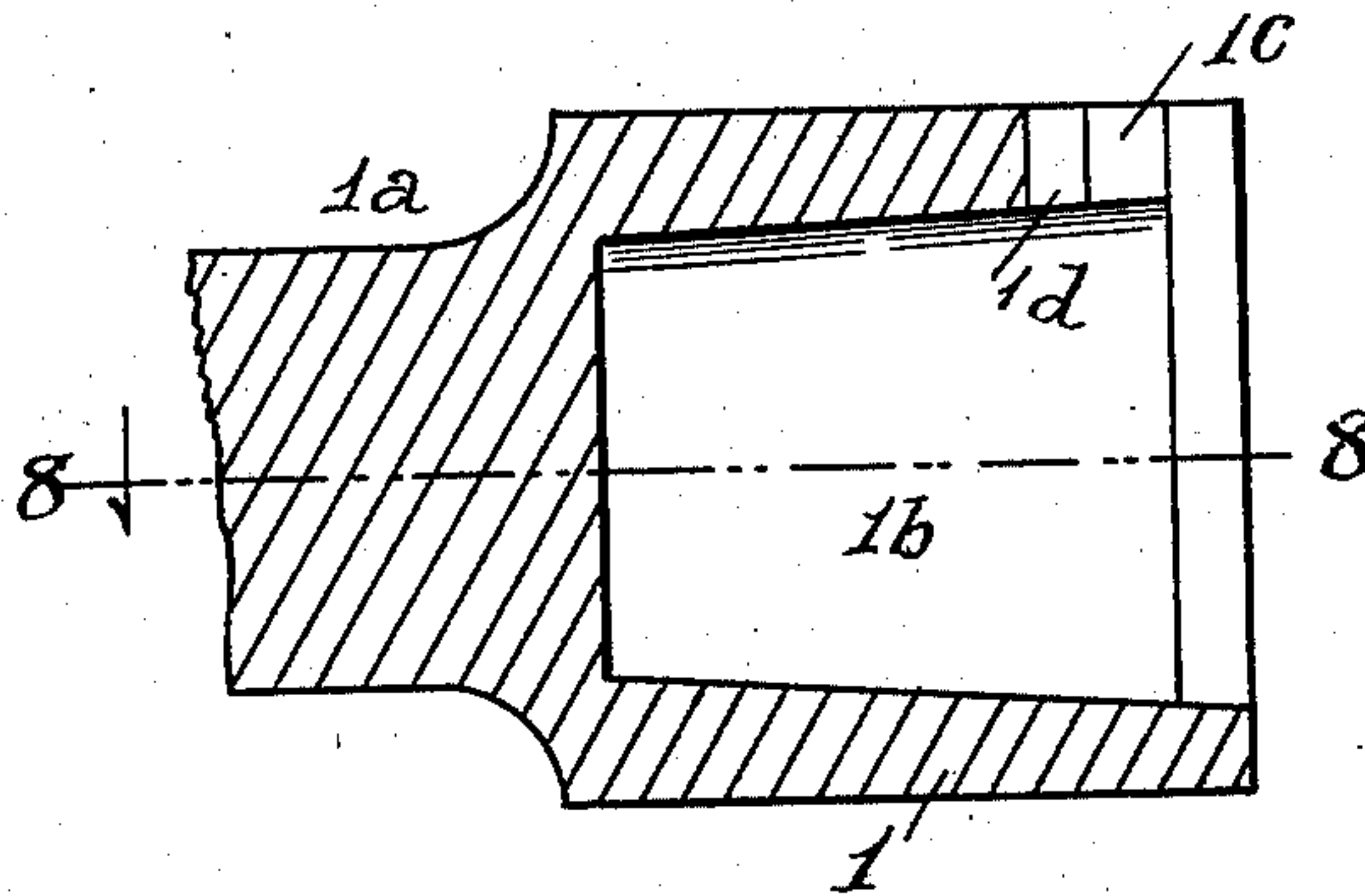


FIG. 6.

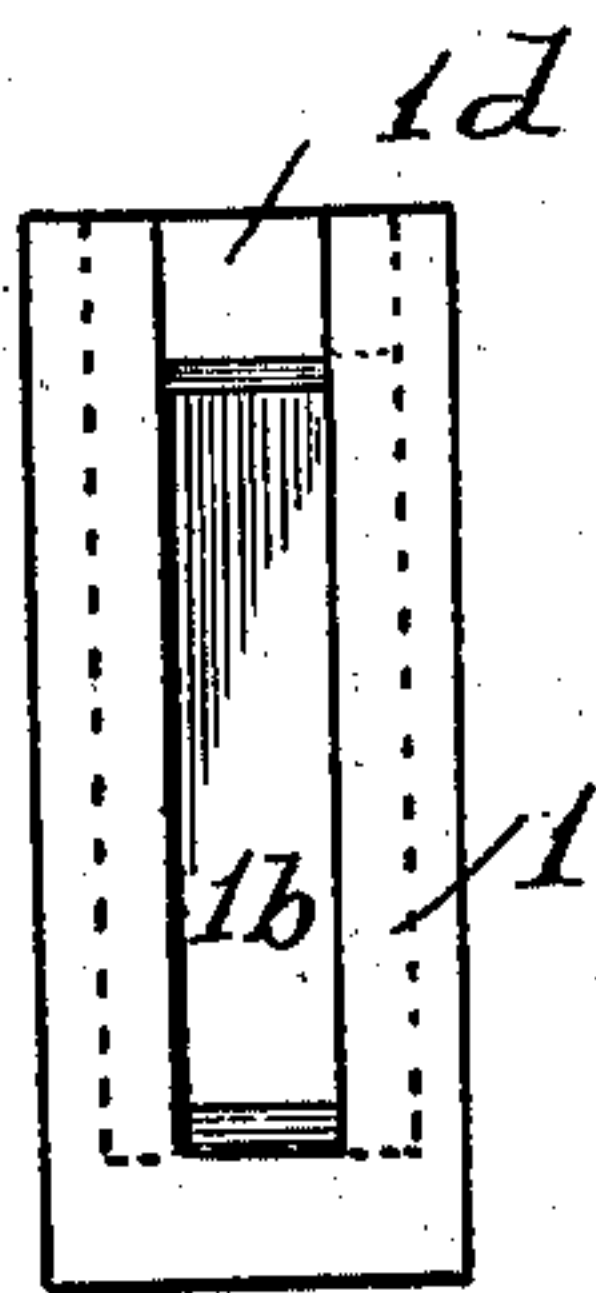


FIG. 9.

FIG. 8.

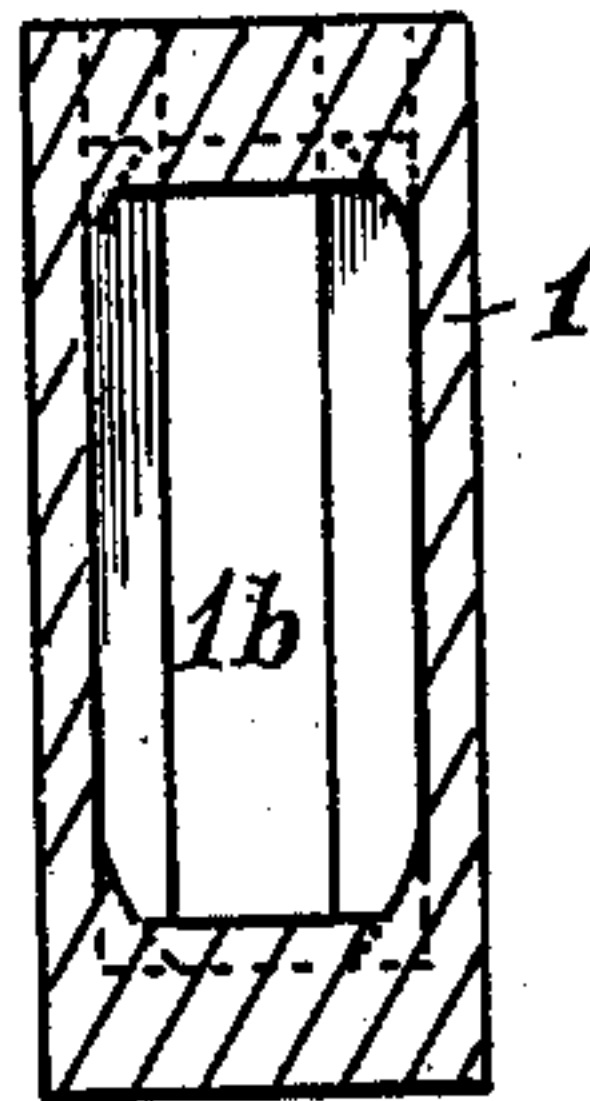


FIG. 10.

WITNESSES.
A. Hayden
R. B. Dooling,

INVENTOR.
JAMES L. COOK.
By *Atty N. DuBois.*

UNITED STATES PATENT OFFICE.

JAMES L. COOK, OF SPRINGFIELD, ILLINOIS.

DRILL-SOCKET.

SPECIFICATION forming part of Letters Patent No. 712,653, dated November 4, 1902.

Application filed September 9, 1901. Serial No. 74,798. (No model.)

To all whom it may concern:

Be it known that I, JAMES L. COOK, a citizen of the United States, residing at Springfield, in the county of Sangamon and State of Illinois, have invented certain new and useful Improvements in Drill-Sockets, of which the following is such a full, clear, and exact description as will enable others skilled in the art to which it appertains to make and use my said invention.

My invention relates, primarily, to miners' drills; and the purpose of my invention is to provide a drill-socket so constructed and arranged that the drill may be readily inserted in the socket in such manner that the drill will not turn in its socket nor be displaced or withdrawn from the socket during the operation of withdrawing the drill from the hole which has been bored by it.

With this general purpose in view my invention consists of the novel features of construction and combinations of parts shown in the annexed drawings, to which reference is hereby made, and in which similar reference-numerals designate like parts in the several views.

Referring to the drawings, Figure 1 is a top plan of the complete device. Fig. 2 is a vertical longitudinal section on the line 2 2 of Fig. 1. Fig. 3 is an end elevation of the drill-socket, the drill being withdrawn. Fig. 4 is a vertical transverse section on the line 4 4 of Fig. 1. Figs. 5, 6, and 9 are respectively a side elevation, a top plan, and an end elevation, of a modified form of the head. Fig. 7 is a vertical longitudinal section through the head on the line 7 7 of Fig. 6. Fig. 8 is a horizontal longitudinal section on the line 8 8 of Fig. 7, and Fig. 10 is a vertical transverse section on the line 10 10 of Fig. 6.

My device is specially adapted for use in mining coal, and in order that my invention may be more clearly understood I will briefly explain the practice of coal-miners in the use of drills. The drilling is usually done with a drill which fits in a suitable socket and has near that end of the drill which enters the socket a transverse hole. In practice the drill is forced into the coal or other material by any suitable driving mechanism. The screw or other feed device is effective. The

screw is then run back for the purpose of withdrawing the drill; but it frequently happens, especially with short drills, that the drill becomes detached from the head and remains in the hole which it has bored. In such cases in order to remove the short drill which is stuck in the hole the operator employs a hooked wire, which he inserts in the drilled hole and manipulates the wire until the hook enters the transverse hole in the drill and then withdraws the drill by pulling on the wire. This procedure is tedious and is not always effective. By forming the drill-socket and the drill so that the drill cannot be accidentally withdrawn from the socket during backward turning of the drill-socket I avoid the necessity for the use of the hooked wire or equivalent device for removing the drill and produce an apparatus which is certain and effective in operation.

The head 1 is preferably approximately rectangular in form and has a cylindrical extension 1^a, in which the feed-screw 2 is secured. In the head 1 is a longitudinal mortise 1^b, in which the tapering end of the drill 3 fits. In the side walls of the mortise 1^b are two L-shaped channels or ways 1^c, one in each side wall. The longitudinal member of each of the ways 1^c begins a little inside of the outer end of the mortise and extends to the bottom of the mortise. The transverse member of each of the ways 1^c begins at the outer surface of the head and extends inward until it merges with the longitudinal member. A transverse opening 1^d opens into the mortise 1^b, and the transverse members of the channels 1^c extend across the side walls of the opening, as shown in Figs. 2 and 5 of the drawings. That part of the drill which enters the socket is slightly tapering and is provided with a transverse pin or projecting stops 3^a, adapted to travel in the ways 1^c. The front side walls of the transverse members of the ways 1^c and the end walls of the longitudinal members of said ways are so formed and situated that either may serve as barriers against which the stops 3^a will strike to prevent longitudinal withdrawal of the drill. The lower or bottom part of the mortise 1^b is closed and is of a form adapted to hold the tool in line with the axis of the socket and prevent the tool from turning in

the socket and also to prevent transverse displacement of the tool when it is seated for drilling. To avoid accidental displacement of the drill, my device is so constructed and
5 arranged that two movements are required for either the insertion or the removal of the drill—that is to say, in inserting the drill it must be moved sidewise to enter the mortise and must then be moved endwise to seat the
10 drill in the mortise. In removing the drill this procedure must be reversed.

In inserting the drill in the socket the drill is so placed that the stops 3^a will enter the transverse members of the ways 1^c. The
15 drill is then moved transversely relative to the socket until the stops come into line with the longitudinal members of the ways 1^c. It may then be pushed inward until the drill seats firmly in the socket.

20 When it is desired to withdraw the drill from the hole which it has made, the head 1 is pulled longitudinally, causing the head to slide on the drill until the pin engages with the barriers at the outer ends of the longitudinal members of the ways 1^c. The stops
25 engaging with the barriers then prevent the withdrawal of the drill from the socket, and by continuing to pull on the head the drill may be withdrawn from the hole. The drill
30 may then be slid slightly inward in the socket to bring the stops into registry with the transverse members of the ways 1^c. When the stops have reached this position, the drill may be moved transversely in the socket to
35 withdraw the drill from the socket.

The preferable form of my device is shown in Figs. 1 to 4, inclusive; but it is obvious that other equivalent constructions may be employed—such, for example, as that shown
40 in Figs. 5 to 12, inclusive—without departing from my invention, it being essential only that the structure of the socket shall be such as to prevent longitudinal withdrawal of the drill or accidental transverse displacement
45 of the drill during the operation of boring, but permitting lateral or edgewise withdrawal of the drill from the socket after the drill has been withdrawn from the hole which it has bored.

50 In the structure shown in Figs. 5 to 12, inclusive, the way 1^c extends transversely into the mortise 1^b; but the side walls of the mortise are flat, the longitudinal members of the ways being dispensed with and the front side

walls only of the transverse ways extend 55 transversely across and form barriers transverse to the mortise, against which the stops on the drill will strike and prevent longitudinal withdrawal of the drill.

From the foregoing it will be seen that the 60 peculiar form of the socket adapts it to prevent turning of the tool in the socket and to prevent lateral displacement of the tool in the socket and also makes it available for withdrawing the drill from the hole without the 65 use of a hook or similar appliance.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A head for drill-sockets, provided with 70 a longitudinal mortise completely surrounded for a part of its length by inclosing walls, a barrier extending inwardly from a side wall of said mortise, a transverse opening communicating with said mortise, and channels 75 extending across the side walls of said opening, as set forth.

2. A head for drill-sockets provided with a longitudinal mortise completely surrounded for a part of its length by inclosing walls, a 80 barrier extending inwardly from a side wall of said mortise, a transverse opening communicating with said mortise and channels extending across the side walls of said opening; in combination with a drill usable with 85 said head and having a shank provided with projecting stops fitting in the channels extending across the side walls of the transverse opening in said head, as set forth.

3. In a device of the class described, a head 90 provided with a longitudinal mortise surrounded by inclosing walls, a transverse opening communicating with said mortise, channels extending across the side walls of said opening and internal L-shaped ways having 95 longitudinal and transverse members in the side walls of said mortise; in combination with a drill having a shank provided with laterally-projecting stops fitting in the L-shaped ways in said head, as set forth. 100

In witness whereof I have hereunto subscribed my name, at Springfield, Illinois, this 10th day of July, 1901.

JAMES L. COOK.

Witnesses:

C. J. PETERSON, Jr.,
SHELBY C. DORWIN.